CLAIMS

1. A device for sterilization in production of packages (8), which is adapted for sterilization with a gaseous sterilizing agent kept in the gaseous phase throughout the sterilization process, said device comprising a heating zone (2), a sterilization zone (3) and a venting zone (4), c h a r a c t e r i s e d i n that it further comprises an ambient temperature sensor (27) for sensing the ambient temperature outside the device (1), a concentration meter (29) for measuring the concentration of sterilizing agent in the sterilization zone (3) and a first control unit for controlling the amount of sterilizing agent introduced in the sterilization zone (3) based on the temperature measured by the ambient temperature sensor (27) and the concentration measured by the concentration meter (29).

2. A device as claimed in claim 1, further comprising a package start temperature sensor for sensing the temperature of the packages (8) entering the heating zone (2).

3. A device as claimed in claim 1 or 2, further comprising a package heating temperature sensor for sensing the temperature of the packages (8) before entry into the sterilization zone (3).

4. A device as claimed in any one of claims 1-3, further comprising a feedback circuit for controlling the heating in the heating zone (2) based on the temperature of the packages (8).

5. A device as claimed in any one of the preceding claims, further comprising a condensation detector (34) for detecting condensation in the sterilization zone (3).

6. A device as claimed in any one of the preceding claims, further comprising means for maintaining a higher pressure in the sterilization zone (3) than in the heating zone (2) and venting zone (4).

7. A device as claimed in any one of the preceding claims, wherein said zones (2, 3, 4) are separated from each other by means of partitionings (6, 7) having openings (6a, 7a) for the passage of packages (8).

8. A device as claimed in any one of the preceding claims, which is adapted for sterilization with a gaseous sterilizing agent in the form of gaseous hydrogen peroxide.

9. A device as claimed in any one of the preceding claims, which is adapted to sterilize packages (8) before filling of the packages (8), said packages (8) having an open end (11) and a closed end (12).

10. A device as claimed in claim 9, wherein the heating zone (2) comprises means (13) for heating the packages (8) to a temperature above a dew point of the sterilizing agent used in the sterilization zone (3).

11. A device as claimed in claim 9 or 10, wherein the venting zone (4) comprises means (21, 24) for venting away the sterilizing agent used in the sterilization zone (3) from the packages (8) after sterilization.

12. A device as claimed in any one of claims 9-11, further comprising means (17, 20) for controlling a flow of gaseous sterilizing agent in the sterilization zone (3), such that the gaseous sterilizing agent flows essentially in a direction from the open end (11) of the packages (8) towards the closed end (12) of the packages (8).

13. A device as claimed in claim 12, wherein the means (17, 20) for controlling the flow of gaseous sterilizing agent are arranged to introduce the gaseous sterilizing agent in a top portion (18) of the sterilization zone (3) and to evacuate the gaseous sterilizing agent in a bottom portion (19) of the sterilization zone (3), maintaining a flow of gaseous sterilizing agent essentially from top to bottom.

14. A device as claimed in any one of claims 9-13 further comprising means (21, 24) for controlling a

venting air flow in the venting zone (4), such that the venting air flows essentially in a direction from the open end (11) of the packages (8) towards the closed end (12) of the packages (8).

15. A device as claimed in claim 14, wherein the means (21, 24) for controlling the flow of venting air are arranged to introduce the venting air in a top portion (22) of the venting zone (4) and to evacuate the venting air in a bottom portion (23) of the venting zone (4), maintaining a flow of venting air essentially from top to bottom.

16. A device as claimed in any one of claims 1-8, which is adapted to sterilize itself (1) internally.

17. A device as claimed in claim 16, further comprising means (13) for heating the interior of the device (1).

18. A device as claimed in any one of the preceding claims, comprising a unit (25) for production of the gaseous sterilizing agent.

19. A device as claimed in any one of the preceding claims, further comprising a filling zone (5) for filling packages (8), and means for maintaining a higher pressure in the filling zone (5) than in the venting zone (4).

20. A method of sterilizing packages (8) in production of the packages (8), said packages (8) having an open end (11) and a closed end (12), wherein a gaseous sterilizing agent is used and kept in the gaseous phase throughout the sterilization process c h a r a c t e r - i s e d i n that an ambient temperature and a concentration of sterilizing agent in a sterilization zone (3) where sterilization is performed are measured and used for controlling the amount of sterilizing agent introduced in the sterilization zone (3) .

21. A method as claimed in claim 20, wherein an ambient temperature is measured and used for controlling the heating in a heating zone (2) where heating of the packages (8) is performed.

22. A method as claimed in claim 20 or 21, wherein a temperature of the packages (8) entering the heating zone (2) is measured and used for controlling the heating in the heating zone (2).

23. A method as claimed in any one of claims 20-22, a temperature of the packages (8) just before they are passed into the sterilization zone (3) is measured and used for controlling the heating in the heating zone (2).

24. A method as claimed in any one of claims 20-23, wherein a positive pressure is maintained in the sterilization zone (3) in which the sterilization is performed.

25. A method as claimed in any one of claims 20-24, wherein the packages (8) are passed into the heating zone (2) where they are heated to a temperature above the dew point of the sterilizing agent.

26. A method as claimed in claim 25, wherein the heated packages (8) are passed through an opening (6a) in a partitioning (6) separating the heating zone (2) and the sterilization zone (3) into the sterilization zone (3), where they are subjected to the gaseous sterilizing agent.

27. A method as claimed in claim 26, wherein the sterilized packages (8) are passed through an opening (7a) in a partitioning (7) separating the sterilization zone (3) and a venting zone (4) into the venting zone (4), where they are subjected to hot sterile air for venting away the sterilizing agent.

28. A method as claimed in claim 26 or 27, wherein the gaseous sterilizing agent in the sterilization zone (3) flows essentially in a direction from the open end (11) of the packages (8) towards the closed end (12) of the packages (8).

29. A method as claimed in claim 28, wherein the gaseous sterilizing agent is introduced in a top portion (18) of the sterilization zone (3) and evacuated in a bottom portion (19) of the sterilization zone (8), so

that a flow of sterilizing agent essentially from top to bottom is maintained.

30. A method as claimed in any one of claims 27-29, wherein the venting air in the venting zone (4) flows essentially in a direction from the open end (11) of the packages (8) towards the closed end (12) of the packages (8).

31. A method as claimed in claim 30, wherein the venting air is introduced in a top portion (22) of the venting zone (4) and evacuated in a bottom portion (23) of the venting zone (4), so that an air flow essentially from top to bottom is maintained.

32. A method as claimed in any one of claims 20-31, wherein the gaseous sterilizing agent is produced by addition of liquid sterilizing agent to hot air.

33. A method as claimed in claim 32, wherein the temperature and flow of air for production of the gaseous sterilizing agent is controlled based on detection of condensation in the sterilization zone (3).

34. A method as claimed in any one of claims 20-33, wherein gaseous hydrogen peroxide is used as sterilizing agent.

35. A method as claimed in any one of claims 27-34, wherein a higher pressure is maintained in a filling zone for filling vented packages than in the venting zone (4).